**生成机器码作业**

**一、程序说明**

本次作业分为两部分，第一部分中间代码生成，生成结果如下，该部分应该没有问题；第二部分目标代码生成，生成结果如下，但是Mars运行时出现栈异常错误...在作业截止前，因为改动使得程序异常TAT报错，所以注释掉了目标代码生成函数，中间代码生成功能依然正确，在当前目录下生成mid\_code.txt。（下周日一定交正确的汇编码生成TAT，望助教见谅）

个人感觉错误原因在于函数调用的栈空间开辟与释放出现问题，基础语句的翻译应该不会有太大差错，正在全力抢救...

**二、程序使用说明**

程序通过控制台输入决定路径即可，或者将输入和打开文件部分注释掉，则选择工程文件下15071054\_test.txt进行读取，方便操作。

**三、程序结果说明**

result.txt：存放分词内容

error\_log.txt：存放错误信息

mid\_code.txt：存放中间四元式

object\_code.txt：存放目标代码

**四、四元式（文件夹中有txt格式）**

init returnyear

#RET = 2018 + 0

GOTO returnyear@end

init add

$t0 = x + y

GOTO add@end

init error

$t1 = 1 + 0

If err\_typ != $t1

Then Goto Label1

printf string 0

GOTO Label0

Label1:

$t2 = 2 + 0

If err\_typ != $t2

Then Goto Label2

printf string 1

GOTO Label0

Label2:

$t3 = 3 + 0

If err\_typ != $t3

Then Goto Label4

printf string 2

GOTO Label3

Label4:

printf string 3

Label3:

Label0:

$t4 = error\_number + 1

GOTO error@end

init cumulative\_sum

If x > y

Then Goto Label5

push 3

call error

GOTO Label6

Label5:

If y > 100

Then Goto Label7

push 1

call error

GOTO Label8

Label7:

If x < -100

Then Goto Label9

push 2

call error

GOTO Label10

Label9:

$t5 = x - y

If $t5 == 0

Then Goto Label11

push x

$t6 = x + 1

push $t6

push y

call cumulative\_sum

$t7 = #RET + 0

push $t7

call add

$t8 = #RET + 0

GOTO cumulative\_sum@end

GOTO Label12

Label11:

#RET = x + 0

GOTO cumulative\_sum@end

Label12:

Label10:

Label8:

Label6:

init returnc

If void\_index < 5

Then Goto Label13

$t9 = void\_index + 1

call returnc

$t10 = #RET + 0

GOTO returnc@end

GOTO Label14

Label13:

#RET = 67 + 0

GOTO returnc@end

Label14:

init output

Label15:

printf string 4

printf char input

#RET = input + 0

GOTO output@end

If 1 == 0

Then Goto Label15

GOTO Label15

Label16:

init register\_disaster

$t11 = t1 + t2

$t11 = $t11 + t3

$t11 = $t11 + t4

$t11 = $t11 + t5

$t11 = $t11 + t6

$t11 = $t11 + t7

$t11 = $t11 + t8

$t11 = $t11 + t9

$t11 = $t11 + t10

$t11 = $t11 + t11

$t11 = $t11 + t12

GOTO register\_disaster@end

init warning

init test

letters[0] = 49

letters[1] = 50

letters[2] = 97

$t12 = letters[0]

$t13 = letters[1]

$t12 = $t12 + $t13

$t14 = letters[2]

$t12 = $t12 + $t14

$t15 = int\_test + int\_test

$t15 = $t15 + int\_test

$t16 = int\_test \* int\_test

$t15 = $t15 - $t16

$t17 = 65 + 0

If char\_test != $t17

Then Goto Label18

Label19:

$t18 = 131 + char\_test

$t19 = letters[1]

$t18 = $t18 + $t19

$t20 = letters[0]

$t18 = $t18 - $t20

$t21 = letters[2]

$t18 = $t18 - $t21

$t22 = i \* 1

$t18 = $t18 + $t22

$t18 = $t18 + 0

$t23 = i - 1

If i >= 0

Then Goto Label19

GOTO Label19

Label20:

GOTO Label17

Label18:

$t24 = 97 + 0

If char\_test != $t24

Then Goto Label21

$t25 = 221 + char\_test

$t26 = letters[1]

$t25 = $t25 + $t26

$t27 = letters[0]

$t25 = $t25 - $t27

$t28 = letters[2]

$t25 = $t25 - $t28

$t29 = i \* 1

$t25 = $t25 + $t29

GOTO Label17

Label21:

Label17:

printf string 5

printf string 6

printf int int\_test

Label22:

If i >= 5

Then Goto Label24

$t30 = 10 + 0

If i != $t30

Then Goto Label27

GOTO Label26

Label27:

$t31 = 57 + 0

If i != $t31

Then Goto Label28

GOTO Label26

Label28:

$t32 = 8 + 0

If i != $t32

Then Goto Label29

GOTO Label26

Label29:

$t33 = 55 + 0

If i != $t33

Then Goto Label30

GOTO Label26

Label30:

$t34 = 6 + 0

If i != $t34

Then Goto Label31

GOTO Label26

Label31:

Label26:

GOTO Label25

Label24:

$t35 = 2 \* i

$t35 = $t35 / 2

$t35 = $t35 + 48

$t35 = $t35 - 0

$t36 = 0 + 0

If $t35 != $t36

Then Goto Label33

GOTO Label32

Label33:

$t37 = 48 + 0

If $t35 != $t37

Then Goto Label34

GOTO Label32

Label34:

Label32:

Label25:

$t38 = i - 1

If i >= 0

Then Goto Label22

GOTO Label22

Label23:

push char\_test

call output

push 4

call error

printf string 7

scanf int x

scanf int y

printf string 8

scanf char input

Label35:

$t39 = i \* 1

$t39 = $t39 - 1

$t39 = $t39 + 1

push x

push y

call cumulative\_sum

$t40 = #RET + 0

result[$t39] = $t40

If 0 == 0

Then Goto Label35

GOTO Label35

Label36:

Label37:

result[i] = i

$t41 = i + 1

$t42 = y - x

If i < $t42

Then Goto Label37

GOTO Label37

Label38:

If x >= -100

Then Goto Label39

If y <= 100

Then Goto Label41

If x <= y

Then Goto Label43

printf string 9

$t43 = result[0]

printf int $t43

GOTO Label44

Label43:

Label44:

GOTO Label42

Label41:

Label42:

GOTO Label40

Label39:

Label40:

printf string 10

call returnyear

$t44 = #RET + 0

printf int $t44

push input

call output

$t45 = #RET + 0

If c == 99

Then Goto Label45

printf string 11

printf int t1

GOTO Label46

Label45:

printf string 12

printf int t2

Label46:

call returnc

$t46 = #RET + 0

$t47 = c + 0

If $t47 == 67

Then Goto Label47

printf string 13

GOTO Label48

Label47:

printf string 14

Label48:

call warning

call test

printf string 15

printf int i

printf string 16

push 0

push 0

push 0

push 0

push 0

push 0

push 0

push 0

push 0

push 0

push 0

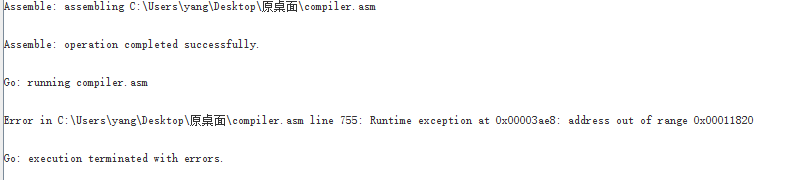
push 0

call register\_disaster

$t48 = #RET + 0

printf int $t48

**五、Mips汇编码（文件夹中有txt格式，有错）**



.data

$Message0:.asciiz"Max value limit."

$Message1:.asciiz"Min value limit."

$Message2:.asciiz"Invalid Input."

$Message3:.asciiz"Error Type Not Define."

$Message4:.asciiz"Letter is "

$Message5:.asciiz"Please Input Lower Bound and Upper Bound:"

$Message6:.asciiz"Please Input A Char:"

$Message7:.asciiz"X sum to Y = "

$Message8:.asciiz"It's already "

$Message9:.asciiz"It is Lower c."

$Message10:.asciiz"It is not Lower c"

$Message11:.asciiz"\tReturnC is Upper C.\n"

$Message12:.asciiz"ReturnC is not Upper C"

$Message13:.asciiz"Final i = "

$Message14:.asciiz"Register\_Disater = "

.text

add $fp , $sp , $zero

addi $gp , $gp , 65536

j main

nop

returnyear:

sw $t0 , 0($sp)

sw $t1 , -4($sp)

sw $t2 , -8($sp)

sw $t3 , -12($sp)

sw $t4 , -16($sp)

sw $t5 , -20($sp)

sw $t6 , -24($sp)

sw $s0 , -28($sp)

sw $s1 , -32($sp)

sw $s2 , -36($sp)

sw $s3 , -40($sp)

sw $s4 , -44($sp)

sw $s5 , -48($sp)

sw $s6 , -52($sp)

sw $fp , -56($sp)

sw $ra , -60($sp)

add $fp , $sp , $zero

addi $sp , $sp , -64

li $v0 , 2018

j returnyear$end

nop

returnyear$end:

lw $ra , 4($sp)

lw $fp , 8($sp)

lw $s6 , 12($sp)

lw $s5 , 16($sp)

lw $s4 , 20($sp)

lw $s3 , 24($sp)

lw $s2 , 28($sp)

lw $s1 , 32($sp)

lw $s0 , 36($sp)

lw $t6 , 40($sp)

lw $t5 , 44($sp)

lw $t4 , 48($sp)

lw $t3 , 52($sp)

lw $t2 , 56($sp)

lw $t1 , 60($sp)

lw $t0 , 64($sp)

addi $sp , $sp , 64

jr $ra

nop

add:

addi $sp , $sp , 8

sw $t0 , -12($sp)

sw $t1 , -16($sp)

sw $t2 , -20($sp)

sw $t3 , -24($sp)

sw $t4 , -28($sp)

sw $t5 , -32($sp)

sw $t6 , -36($sp)

sw $s0 , -40($sp)

sw $s1 , -44($sp)

sw $s2 , -48($sp)

sw $s3 , -52($sp)

sw $s4 , -56($sp)

sw $s5 , -60($sp)

sw $s6 , -64($sp)

sw $fp , -68($sp)

sw $ra , -72($sp)

add $fp , $sp , $zero

addi $sp , $sp , -76

lw $t9 , 0($fp)

lw $t8 , -4($fp)

add $v0 , $t9 , $t8

j add$end

nop

add$end:

lw $ra , 4($sp)

lw $fp , 8($sp)

lw $s6 , 12($sp)

lw $s5 , 16($sp)

lw $s4 , 20($sp)

lw $s3 , 24($sp)

lw $s2 , 28($sp)

lw $s1 , 32($sp)

lw $s0 , 36($sp)

lw $t6 , 40($sp)

lw $t5 , 44($sp)

lw $t4 , 48($sp)

lw $t3 , 52($sp)

lw $t2 , 56($sp)

lw $t1 , 60($sp)

lw $t0 , 64($sp)

addi $sp , $sp , 76

jr $ra

nop

error:

addi $sp , $sp , 4

sw $t0 , -20($sp)

sw $t1 , -24($sp)

sw $t2 , -28($sp)

sw $t3 , -32($sp)

sw $t4 , -36($sp)

sw $t5 , -40($sp)

sw $t6 , -44($sp)

sw $s0 , -48($sp)

sw $s1 , -52($sp)

sw $s2 , -56($sp)

sw $s3 , -60($sp)

sw $s4 , -64($sp)

sw $s5 , -68($sp)

sw $s6 , -72($sp)

sw $fp , -76($sp)

sw $ra , -80($sp)

add $fp , $sp , $zero

addi $sp , $sp , -84

li $t7 , 1

sw $t7 , -4($fp)

lw $t9 , -4($fp)

lw $t8 , 0($fp)

bne $t9 , $t8 , $label1

nop

li $v0 , 4

la $a0 , $Message0

syscall

j $label0

nop

$label1:

li $t7 , 2

sw $t7 , -8($fp)

lw $t9 , -8($fp)

lw $t8 , 0($fp)

bne $t9 , $t8 , $label2

nop

li $v0 , 4

la $a0 , $Message1

syscall

j $label0

nop

$label2:

li $t7 , 3

sw $t7 , -12($fp)

lw $t9 , -12($fp)

lw $t8 , 0($fp)

bne $t9 , $t8 , $label4

nop

li $v0 , 4

la $a0 , $Message2

syscall

j $label3

nop

$label4:

li $v0 , 4

la $a0 , $Message3

syscall

$label3:

$label0:

lw $t9 , 20($gp)

addi $t7 , $t9 , 1

sw $t7 , 20($gp)

j error$end

nop

error$end:

lw $ra , 4($sp)

lw $fp , 8($sp)

lw $s6 , 12($sp)

lw $s5 , 16($sp)

lw $s4 , 20($sp)

lw $s3 , 24($sp)

lw $s2 , 28($sp)

lw $s1 , 32($sp)

lw $s0 , 36($sp)

lw $t6 , 40($sp)

lw $t5 , 44($sp)

lw $t4 , 48($sp)

lw $t3 , 52($sp)

lw $t2 , 56($sp)

lw $t1 , 60($sp)

lw $t0 , 64($sp)

addi $sp , $sp , 84

jr $ra

nop

cumulative\_sum:

addi $sp , $sp , 8

sw $t0 , -36($sp)

sw $t1 , -40($sp)

sw $t2 , -44($sp)

sw $t3 , -48($sp)

sw $t4 , -52($sp)

sw $t5 , -56($sp)

sw $t6 , -60($sp)

sw $s0 , -64($sp)

sw $s1 , -68($sp)

sw $s2 , -72($sp)

sw $s3 , -76($sp)

sw $s4 , -80($sp)

sw $s5 , -84($sp)

sw $s6 , -88($sp)

sw $fp , -92($sp)

sw $ra , -96($sp)

add $fp , $sp , $zero

addi $sp , $sp , -100

lw $t9 , 0($fp)

lw $t8 , -4($fp)

sub $t7 , $t9 , $t8

blez $t7 , $label5

nop

li $t7 , 3

sw $t7 , 0($sp)

addi $sp , $sp , -4

jal error

nop

j $label6

nop

$label5:

lw $t9 , -4($fp)

subi $t7 , $t9 , 100

blez $t7 , $label7

nop

li $t7 , 1

sw $t7 , 0($sp)

addi $sp , $sp , -4

jal error

nop

j $label8

nop

$label7:

lw $t9 , 0($fp)

subi $t7 , $t9 , -100

bgez $t7 , $label9

nop

li $t7 , 2

sw $t7 , 0($sp)

addi $sp , $sp , -4

jal error

nop

j $label10

nop

$label9:

lw $t9 , 0($fp)

lw $t8 , -4($fp)

sub $t7 , $t9 , $t8

sw $t7 , -20($fp)

lw $t9 , -20($fp)

beq $t9 , $zero , $label11

nop

lw $t7 , 0($fp)

sw $t7 , 0($sp)

addi $sp , $sp , -4

lw $t9 , 0($fp)

addi $t7 , $t9 , 1

sw $t7 , -24($fp)

lw $t7 , -24($fp)

sw $t7 , 0($sp)

addi $sp , $sp , -4

lw $t7 , -4($fp)

sw $t7 , 0($sp)

addi $sp , $sp , -4

jal cumulative\_sum

nop

addi $t7 , $v0 , 0

sw $t7 , -28($fp)

lw $t7 , -28($fp)

sw $t7 , 0($sp)

addi $sp , $sp , -4

jal add

nop

addi $v0 , $v0 , 0

j cumulative\_sum$end

nop

j $label12

nop

$label11:

lw $t9 , 0($fp)

addi $v0 , $t9 , 0

j cumulative\_sum$end

nop

$label12:

$label10:

$label8:

$label6:

cumulative\_sum$end:

lw $ra , 4($sp)

lw $fp , 8($sp)

lw $s6 , 12($sp)

lw $s5 , 16($sp)

lw $s4 , 20($sp)

lw $s3 , 24($sp)

lw $s2 , 28($sp)

lw $s1 , 32($sp)

lw $s0 , 36($sp)

lw $t6 , 40($sp)

lw $t5 , 44($sp)

lw $t4 , 48($sp)

lw $t3 , 52($sp)

lw $t2 , 56($sp)

lw $t1 , 60($sp)

lw $t0 , 64($sp)

addi $sp , $sp , 100

jr $ra

nop

returnc:

sw $t0 , -8($sp)

sw $t1 , -12($sp)

sw $t2 , -16($sp)

sw $t3 , -20($sp)

sw $t4 , -24($sp)

sw $t5 , -28($sp)

sw $t6 , -32($sp)

sw $s0 , -36($sp)

sw $s1 , -40($sp)

sw $s2 , -44($sp)

sw $s3 , -48($sp)

sw $s4 , -52($sp)

sw $s5 , -56($sp)

sw $s6 , -60($sp)

sw $fp , -64($sp)

sw $ra , -68($sp)

add $fp , $sp , $zero

addi $sp , $sp , -72

lw $t9 , 24($gp)

subi $t7 , $t9 , 5

bgez $t7 , $label13

nop

lw $t9 , 24($gp)

addi $t7 , $t9 , 1

sw $t7 , 24($gp)

jal returnc

nop

addi $v0 , $v0 , 0

j returnc$end

nop

j $label14

nop

$label13:

li $v0 , 67

j returnc$end

nop

$label14:

returnc$end:

lw $ra , 4($sp)

lw $fp , 8($sp)

lw $s6 , 12($sp)

lw $s5 , 16($sp)

lw $s4 , 20($sp)

lw $s3 , 24($sp)

lw $s2 , 28($sp)

lw $s1 , 32($sp)

lw $s0 , 36($sp)

lw $t6 , 40($sp)

lw $t5 , 44($sp)

lw $t4 , 48($sp)

lw $t3 , 52($sp)

lw $t2 , 56($sp)

lw $t1 , 60($sp)

lw $t0 , 64($sp)

addi $sp , $sp , 72

jr $ra

nop

output:

addi $sp , $sp , 4

sw $t0 , -4($sp)

sw $t1 , -8($sp)

sw $t2 , -12($sp)

sw $t3 , -16($sp)

sw $t4 , -20($sp)

sw $t5 , -24($sp)

sw $t6 , -28($sp)

sw $s0 , -32($sp)

sw $s1 , -36($sp)

sw $s2 , -40($sp)

sw $s3 , -44($sp)

sw $s4 , -48($sp)

sw $s5 , -52($sp)

sw $s6 , -56($sp)

sw $fp , -60($sp)

sw $ra , -64($sp)

add $fp , $sp , $zero

addi $sp , $sp , -68

$label15:

li $t9 , 1

beq $t9 , $zero , $label16

nop

li $v0 , 4

la $a0 , $Message4

syscall

li $v0 , 11

lw $t7 , 0($fp)

add $a0 , $t7 , $zero

syscall

lw $t9 , 0($fp)

addi $v0 , $t9 , 0

j output$end

nop

j $label15

nop

$label16:

output$end:

lw $ra , 4($sp)

lw $fp , 8($sp)

lw $s6 , 12($sp)

lw $s5 , 16($sp)

lw $s4 , 20($sp)

lw $s3 , 24($sp)

lw $s2 , 28($sp)

lw $s1 , 32($sp)

lw $s0 , 36($sp)

lw $t6 , 40($sp)

lw $t5 , 44($sp)

lw $t4 , 48($sp)

lw $t3 , 52($sp)

lw $t2 , 56($sp)

lw $t1 , 60($sp)

lw $t0 , 64($sp)

addi $sp , $sp , 68

jr $ra

nop

register\_disaster:

addi $sp , $sp , 48

sw $t0 , -52($sp)

sw $t1 , -56($sp)

sw $t2 , -60($sp)

sw $t3 , -64($sp)

sw $t4 , -68($sp)

sw $t5 , -72($sp)

sw $t6 , -76($sp)

sw $s0 , -80($sp)

sw $s1 , -84($sp)

sw $s2 , -88($sp)

sw $s3 , -92($sp)

sw $s4 , -96($sp)

sw $s5 , -100($sp)

sw $s6 , -104($sp)

sw $fp , -108($sp)

sw $ra , -112($sp)

add $fp , $sp , $zero

addi $sp , $sp , -116

li $t7 , 1

sw $t7 , 0($fp)

li $t7 , 1

sw $t7 , -4($fp)

li $t7 , 1

sw $t7 , -8($fp)

li $t7 , 1

sw $t7 , -12($fp)

li $t7 , 1

sw $t7 , -16($fp)

li $t7 , 1

sw $t7 , -20($fp)

li $t7 , 1

sw $t7 , -24($fp)

li $t7 , 1

sw $t7 , -28($fp)

li $t7 , 1

sw $t7 , -32($fp)

li $t7 , 1

sw $t7 , -36($fp)

li $t7 , 1

sw $t7 , -40($fp)

li $t7 , 1

sw $t7 , -44($fp)

lw $t9 , 0($fp)

lw $t8 , -4($fp)

add $t7 , $t9 , $t8

sw $t7 , -48($fp)

lw $t9 , -48($fp)

lw $t8 , -8($fp)

add $t7 , $t9 , $t8

sw $t7 , -48($fp)

lw $t9 , -48($fp)

lw $t8 , -12($fp)

add $t7 , $t9 , $t8

sw $t7 , -48($fp)

lw $t9 , -48($fp)

lw $t8 , -16($fp)

add $t7 , $t9 , $t8

sw $t7 , -48($fp)

lw $t9 , -48($fp)

lw $t8 , -20($fp)

add $t7 , $t9 , $t8

sw $t7 , -48($fp)

lw $t9 , -48($fp)

lw $t8 , -24($fp)

add $t7 , $t9 , $t8

sw $t7 , -48($fp)

lw $t9 , -48($fp)

lw $t8 , -28($fp)

add $t7 , $t9 , $t8

sw $t7 , -48($fp)

lw $t9 , -48($fp)

lw $t8 , -32($fp)

add $t7 , $t9 , $t8

sw $t7 , -48($fp)

lw $t9 , -48($fp)

lw $t8 , -36($fp)

add $t7 , $t9 , $t8

sw $t7 , -48($fp)

lw $t9 , -48($fp)

lw $t8 , -40($fp)

add $t7 , $t9 , $t8

sw $t7 , -48($fp)

lw $t9 , -48($fp)

lw $t8 , -44($fp)

add $v0 , $t9 , $t8

j register\_disaster$end

nop

register\_disaster$end:

lw $ra , 4($sp)

lw $fp , 8($sp)

lw $s6 , 12($sp)

lw $s5 , 16($sp)

lw $s4 , 20($sp)

lw $s3 , 24($sp)

lw $s2 , 28($sp)

lw $s1 , 32($sp)

lw $s0 , 36($sp)

lw $t6 , 40($sp)

lw $t5 , 44($sp)

lw $t4 , 48($sp)

lw $t3 , 52($sp)

lw $t2 , 56($sp)

lw $t1 , 60($sp)

lw $t0 , 64($sp)

addi $sp , $sp , 116

jr $ra

nop

warning:

sw $t0 , 0($sp)

sw $t1 , -4($sp)

sw $t2 , -8($sp)

sw $t3 , -12($sp)

sw $t4 , -16($sp)

sw $t5 , -20($sp)

sw $t6 , -24($sp)

sw $s0 , -28($sp)

sw $s1 , -32($sp)

sw $s2 , -36($sp)

sw $s3 , -40($sp)

sw $s4 , -44($sp)

sw $s5 , -48($sp)

sw $s6 , -52($sp)

sw $fp , -56($sp)

sw $ra , -60($sp)

add $fp , $sp , $zero

addi $sp , $sp , -64

warning$end:

lw $ra , 4($sp)

lw $fp , 8($sp)

lw $s6 , 12($sp)

lw $s5 , 16($sp)

lw $s4 , 20($sp)

lw $s3 , 24($sp)

lw $s2 , 28($sp)

lw $s1 , 32($sp)

lw $s0 , 36($sp)

lw $t6 , 40($sp)

lw $t5 , 44($sp)

lw $t4 , 48($sp)

lw $t3 , 52($sp)

lw $t2 , 56($sp)

lw $t1 , 60($sp)

lw $t0 , 64($sp)

addi $sp , $sp , 64

jr $ra

nop

test:

sw $t0 , -60($sp)

sw $t1 , -64($sp)

sw $t2 , -68($sp)

sw $t3 , -72($sp)

sw $t4 , -76($sp)

sw $t5 , -80($sp)

sw $t6 , -84($sp)

sw $s0 , -88($sp)

sw $s1 , -92($sp)

sw $s2 , -96($sp)

sw $s3 , -100($sp)

sw $s4 , -104($sp)

sw $s5 , -108($sp)

sw $s6 , -112($sp)

sw $fp , -116($sp)

sw $ra , -120($sp)

add $fp , $sp , $zero

addi $sp , $sp , -124

li $t7 , 10

sw $t7 , -24($fp)

$label17:

lw $t9 , -24($fp)

subi $t7 , $t9 , 0

bltz $t7 , $label18

nop

lw $t9 , -24($fp)

subi $t7 , $t9 , 5

bltz $t7 , $label19

nop

li $t7 , 10

sw $t7 , -28($fp)

lw $t9 , -28($fp)

lw $t8 , -24($fp)

bne $t9 , $t8 , $label22

nop

li $t7 , 65

sw $t7 , -4($fp)

j $label21

nop

$label22:

li $t7 , 9

sw $t7 , -32($fp)

lw $t9 , -32($fp)

lw $t8 , -24($fp)

bne $t9 , $t8 , $label23

nop

li $t7 , 66

sw $t7 , -4($fp)

j $label21

nop

$label23:

li $t7 , 8

sw $t7 , -36($fp)

lw $t9 , -36($fp)

lw $t8 , -24($fp)

bne $t9 , $t8 , $label24

nop

li $t7 , 67

sw $t7 , -4($fp)

j $label21

nop

$label24:

li $t7 , 7

sw $t7 , -40($fp)

lw $t9 , -40($fp)

lw $t8 , -24($fp)

bne $t9 , $t8 , $label25

nop

li $t7 , 68

sw $t7 , -4($fp)

j $label21

nop

$label25:

li $t7 , 6

sw $t7 , -44($fp)

lw $t9 , -44($fp)

lw $t8 , -24($fp)

bne $t9 , $t8 , $label26

nop

li $t7 , 69

sw $t7 , -4($fp)

j $label21

nop

$label26:

li $t7 , 70

sw $t7 , -4($fp)

$label21:

j $label20

nop

$label19:

li $t9 , 2

lw $t8 , -24($fp)

mul $t7 , $t9 , $t8

sw $t7 , -48($fp)

lw $t9 , -48($fp)

li $t8 , 2

div $t9 , $t8

mflo $t7

sw $t7 , -48($fp)

lw $t9 , -48($fp)

addi $t7 , $t9 , 48

sw $t7 , -48($fp)

lw $t9 , -48($fp)

subi $t7 , $t9 , 0

sw $t7 , -48($fp)

li $t7 , 0

sw $t7 , -52($fp)

lw $t9 , -52($fp)

lw $t8 , -48($fp)

bne $t9 , $t8 , $label28

nop

li $t7 , 65

sw $t7 , -4($fp)

j $label27

nop

$label28:

li $t7 , 71

sw $t7 , -4($fp)

$label27:

$label20:

lw $t9 , -24($fp)

subi $t7 , $t9 , 1

sw $t7 , -24($fp)

j $label17

nop

$label18:

lw $t7 , -4($fp)

sw $t7 , 0($sp)

addi $sp , $sp , -4

jal output

nop

li $t7 , 4

sw $t7 , 0($sp)

addi $sp , $sp , -4

jal error

nop

test$end:

lw $ra , 4($sp)

lw $fp , 8($sp)

lw $s6 , 12($sp)

lw $s5 , 16($sp)

lw $s4 , 20($sp)

lw $s3 , 24($sp)

lw $s2 , 28($sp)

lw $s1 , 32($sp)

lw $s0 , 36($sp)

lw $t6 , 40($sp)

lw $t5 , 44($sp)

lw $t4 , 48($sp)

lw $t3 , 52($sp)

lw $t2 , 56($sp)

lw $t1 , 60($sp)

lw $t0 , 64($sp)

addi $sp , $sp , 124

jr $ra

nop

main:

sw $t0 , -856($sp)

sw $t1 , -860($sp)

sw $t2 , -864($sp)

sw $t3 , -868($sp)

sw $t4 , -872($sp)

sw $t5 , -876($sp)

sw $t6 , -880($sp)

sw $s0 , -884($sp)

sw $s1 , -888($sp)

sw $s2 , -892($sp)

sw $s3 , -896($sp)

sw $s4 , -900($sp)

sw $s5 , -904($sp)

sw $s6 , -908($sp)

sw $fp , -912($sp)

sw $ra , -916($sp)

add $fp , $sp , $zero

addi $sp , $sp , -920

li $t7 , 1

sw $t7 , 32($gp)

li $t7 , 2

sw $t7 , 36($gp)

li $t7 , 48

sw $t7 , 84($gp)

li $t7 , 49

sw $t7 , 88($gp)

li $t7 , 50

sw $t7 , 92($gp)

li $v0 , 4

la $a0 , $Message5

syscall

li $v0 , 5

syscall

add $t7 , $v0 , $zero

sw $t7 , 0($fp)

li $v0 , 5

syscall

add $t7 , $v0 , $zero

sw $t7 , -4($fp)

li $v0 , 4

la $a0 , $Message6

syscall

li $v0 , 12

syscall

add $t7 , $v0 , $zero

sw $t7 , -8($fp)

li $t7 , 0

sw $t7 , 28($gp)

$label29:

beq $zero , $zero , $label30

nop

lw $t9 , 28($gp)

li $t8 , 1

mul $t7 , $t9 , $t8

sw $t7 , -816($fp)

lw $t9 , -816($fp)

subi $t7 , $t9 , 1

sw $t7 , -816($fp)

lw $t9 , -816($fp)

addi $t7 , $t9 , 1

sw $t7 , -816($fp)

lw $t7 , 0($fp)

sw $t7 , 0($sp)

addi $sp , $sp , -4

lw $t7 , -4($fp)

sw $t7 , 0($sp)

addi $sp , $sp , -4

jal cumulative\_sum

nop

addi $t7 , $v0 , 0

sw $t7 , -820($fp)

lw $t8 , -816($fp)

addi $t7 , $t8 , 4

sll $t7 , $t7 , 2

lw $t9 , -820($fp)

sub $t7 , $fp , $t7

sw $t9 , 0($t7)

j $label29

nop

$label30:

li $t7 , 1

sw $t7 , 28($gp)

$label31:

lw $t9 , -4($fp)

lw $t8 , 0($fp)

sub $t7 , $t9 , $t8

sw $t7 , -824($fp)

lw $t9 , 28($gp)

lw $t8 , -824($fp)

sub $t7 , $t9 , $t8

bgez $t7 , $label32

nop

lw $t8 , 28($gp)

addi $t7 , $t8 , 4

sll $t7 , $t7 , 2

lw $t9 , 28($gp)

sub $t7 , $fp , $t7

sw $t9 , 0($t7)

lw $t9 , 28($gp)

addi $t7 , $t9 , 1

sw $t7 , 28($gp)

j $label31

nop

$label32:

li $t7 , 1

sw $t7 , 28($gp)

lw $t9 , 0($fp)

subi $t7 , $t9 , -100

bltz $t7 , $label33

nop

lw $t9 , -4($fp)

subi $t7 , $t9 , 100

bgtz $t7 , $label35

nop

lw $t9 , 0($fp)

lw $t8 , -4($fp)

sub $t7 , $t9 , $t8

bgtz $t7 , $label37

nop

addi $t9 , $zero , 4

sll $t9 , $t9 , 2

sub $t9 , $fp , $t9

lw $t7 , 0($t9)

sw $t7 , -832($fp)

li $v0 , 4

la $a0 , $Message7

syscall

li $v0 , 1

lw $t7 , -832($fp)

add $a0 , $t7 , $zero

syscall

j $label38

nop

$label37:

$label38:

j $label36

nop

$label35:

$label36:

j $label34

nop

$label33:

$label34:

jal returnyear

nop

addi $t7 , $v0 , 0

sw $t7 , -836($fp)

li $v0 , 4

la $a0 , $Message8

syscall

li $v0 , 1

lw $t7 , -836($fp)

add $a0 , $t7 , $zero

syscall

lw $t7 , -8($fp)

sw $t7 , 0($sp)

addi $sp , $sp , -4

jal output

nop

addi $t7 , $v0 , 0

sw $t7 , -12($fp)

lw $t9 , -12($fp)

li $t8 , 99

bne $t9 , $t8 , $label39

nop

li $v0 , 4

la $a0 , $Message9

syscall

li $v0 , 1

lw $t7 , 32($gp)

add $a0 , $t7 , $zero

syscall

j $label40

nop

$label39:

li $v0 , 4

la $a0 , $Message10

syscall

li $v0 , 1

lw $t7 , 36($gp)

add $a0 , $t7 , $zero

syscall

$label40:

jal returnc

nop

addi $t7 , $v0 , 0

sw $t7 , -12($fp)

lw $t9 , -12($fp)

addi $t7 , $t9 , 0

sw $t7 , -848($fp)

lw $t9 , -848($fp)

li $t8 , 67

bne $t9 , $t8 , $label41

nop

li $v0 , 4

la $a0 , $Message11

syscall

j $label42

nop

$label41:

li $v0 , 4

la $a0 , $Message12

syscall

$label42:

jal warning

nop

jal test

nop

li $v0 , 4

la $a0 , $Message13

syscall

li $v0 , 1

lw $t7 , 28($gp)

add $a0 , $t7 , $zero

syscall

sw $zero , 0($sp)

addi $sp , $sp , -4

sw $zero , 0($sp)

addi $sp , $sp , -4

sw $zero , 0($sp)

addi $sp , $sp , -4

sw $zero , 0($sp)

addi $sp , $sp , -4

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addi $sp , $sp , -4

sw $zero , 0($sp)

addi $sp , $sp , -4

sw $zero , 0($sp)

addi $sp , $sp , -4

sw $zero , 0($sp)

addi $sp , $sp , -4

jal register\_disaster

nop

addi $t7 , $v0 , 0

sw $t7 , -852($fp)

li $v0 , 4

la $a0 , $Message14

syscall

li $v0 , 1

lw $t7 , -852($fp)

add $a0 , $t7 , $zero

syscall

li $v0 , 10

syscall